hierarchical, genealogical classification was perhaps seen to be too cumbersome for a reference book like the Manual, as well as probably incorrect in places, but that classification is used in the "Flies of the Neartic Region" (which Griffiths edits). The two works, hardly mutually exclusive, are fascinating in their dichotomy: the meticulous and comprehensive treatment of the Manual, and the very original and synthetic, in places cavalier, treatment of Griffiths (1972). The two works serve different uses: that of the Manual's first two volumes is almost entirely for identification and is not revisionary, so it should prove interesting to see how the results of volume three mesh with Griffiths' 1972 book.

Basically the Manual is a technical masterpiece. Volumes one and two are not a truly scholarly work, but are as encyclopedic as is possible for a work of this size. Regardless of the type of entomologist that you are, this book is a must.—*David Grimaldi, Entomology Department, American Museum of Natural History,* New York, New York 10024.

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MAKING THE GRADE: A CLASSIFICATION OF SOME NORTH AMERICAN CARABIDAE

Cladistic Analysis of North American Platynini and Revision of the *Agonum extensicolle* Group (Colleoptera: Carabidae).—James K. Liebherr, 1986 University of California Publications in Entomology (Volume 106). x + 198 pp. $16.95 (paper).

This work is a systematic revision of a group of North American ground beetles belonging to the tribe Platynini. The contents are divided into sections that are more or less standard for a modern systematic revision. Initial sections provide introductory background information, a cladistic analysis of selected North American platynine species, and keys to the genera of this tribe and to the species of *Agonum* in

North America. The remainder of the work treats a group of seven species, the *Agonum extensicolle* species group. Included are: circumscription of species, analysis of dispersal capabilities, taxonomic treatment, phylogeny, biogeography, and appendices. The work is divided logically into sections, but only those of general interest to a broad entomological audience will be discussed here. My criticisms of this work are largely based upon a different philosophical approach to classification and do not detract from the high quality, detailed taxonomic treatment that Liebherr presents.

The section treating relationships of North American Platynini underscores the difficulty of deriving a meaningful classification from an analysis using the exemplar approach and restricting the included taxa to a particular region. Slightly more than half of the 56 characters used were genitalic or of the female reproductive tract. The 43 exemplar taxa used for the phylogenetic analysis represent less than a quarter of the North American Platynini fauna. This analysis is useful for understanding the placement of the *Agonum extensicolle* species group and finding appropriate outgroup taxa. Liebherr purports to derive his classification, as listed in his Appendix 2, from this preliminary cladistic analysis. Yet his scheme is quite different. Unnatural groups include: *Platynus* which is paraphyletic; *Agonum,* which Liebherr readily admits, is polyphyletic; and only four of nine species groups of *Agonum* are depicted as monophyletic. One of these, the *Agonum quadrimaculatum* species group is monotypic.

The bulk of this work is the taxonomic treatment of the *Agonum extensicolle* species group, with subsequent discussions of its phylogenetic and biogeograhic history. Seven species are recognized; two of these are new. An indication of the taxonomic difficulty of this group of beetles is the number of names proposed for species in this group. There are 26 synonyms for the five previously recognized species, and 14 of these synonymies are new. Liebherr uses qualitative morphological, electrophoretic, and biometric data for the basis of his species concept, and he explicitly states his criteria for recognizing species as distinct lineages; this part of his work is excellent. For example, there are 16 synonyms for *Agonum decorum,* which is polymorphic for color and setation. Both of these characteristics are often used to discriminate between closely related species of Carabidae. Here, a proper understanding of the heterogeneity and intraspecific variability of *A. decorum* is clarified by biometric and electrophoretic analyses of populations. These data are not as useful, however, for determining phylogenetic relationships within the *extensicolle* species group grade.

In the section treating the phylogeny of these species, my methodological and philosophical objections are similar to those for the Platynini analysis discussed earlier. The *extensicolle* group is never supported as monophyletic, although it would be if expanded to include *Agonum quadrimaculatum.* Liebherr states in the introduction that this "group is distinct within the genus, supporting recognition of it as a monophyletic group." Distinctiveness is an inappropriate measure of monophyly; common ancestry is the only relevant criterion for forming natural groups.

Liebherr presents detailed accounts of the present distributions of these species, and he interprets historical events which may have contributed to these distributions. He also compares these with similar distributions in other organsisms. This historical biogeographic analysis is thorough and useful for other workers interested in North American biogeography. His analysis is based upon two trees. The first tree, derived from qualitative morphologiccal data, is strictly dichotomous, while the second tree, a consensus tree, has a basal trichotomy. The historical implications for each of these phylogenies is discussed. It is unfortunate that *A. quadrimaculatum* was not included

so that these interpretations could be based upon an analysis of a monophyletic group.

The most interesting aspect of the proposed biogeographic history of these beetles are the postulated speciation events, suggesting rapid evolution and speciation during the Pleistocene. For example, he suggests that speciation between *A. extimum* and *A. parextimum* occurred one, or at most, two million years ago; and he suggests that *A. decorum,* presently widespread in North America, and *A. elongatulum,* presently restricted to peninsular Florida, separated about 160,000 years ago. This latter event, associated with higher sea levels, is correlated with available data for sea levels during the Sangomon Interglaciation. Yet recent studies (Coope, 1978, 1979; Matthews, 1977, 1979) suggest that there was little morphological change and no documented case of Pleistocene speciation in North American or European Coleoptera. Matthews (1979) reported several species of *Agonum,* possibly conspecific with extant species, from the Beaufort Formation in Alaska. These fossils, from the Miocene, are at least eight million years old. These species are not included in the exemplar Platynini analysis. If these species were included, where would they be located on the tree? Why are apparent rates of speciation so much faster in the *extensicolle* group? Maybe they aren't. Liebherr uses Nei's genetic distance to set an electrophoretic clock to estimate probable dates of divergence between species. Acquiring similar data for extant species, and their relatives, represented by Miocene fossils may provide an internal check for possible dates of divergence within *Agonum* and contribute to an understanding of the problem of species constancy in the Pleistocene.—*James Pakaluk, Department of Entomology, University of Kansas, Lawrence, Kansas 66045.*

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